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United States Patent [19]**Wijay**[11] **Patent Number:** **5,690,643**[45] **Date of Patent:** **Nov. 25, 1997**[54] **STENT DELIVERY SYSTEM**[75] **Inventor:** **Bandula Wijay**, Friendswood, Tex.[73] **Assignee:** **Leocor, Incorporated**, Houston, Tex.[21] **Appl. No.:** **603,267**[22] **Filed:** **Feb. 20, 1996**[51] **Int. Cl.⁶** **A61F 11/00**[52] **U.S. Cl.** **606/108; 606/198**[58] **Field of Search** **606/108, 191, 606/198, 194, 170**[56] **References Cited****U.S. PATENT DOCUMENTS**

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A stent delivery apparatus is disclosed comprising a movable inner tube and a fixed outer tube having corrugations or undulations at its distal end. The undulations or corrugations are stretched by movement of the inner tube, whereupon the stent is placed over the relatively flattened undulations or corrugations. A solid structure or an open structure such as a coil can be used for this purpose. One large proximal undulation is provided for preventing the stent from sliding from the predetermined location during the setting. Upon relative movement between the inner and outer tubes, which can be a single longitudinal or twisting movement or a combination of such movements, the undulations under the stent are outwardly relaxed, forcing the stent to expand toward the vascular wall. The relative movement is then reversed to retract the undulations and the delivery device withdrawn. In an alternative embodiment, the undulations are perforated to allow perfusion under and through the stent from a point external to the patient's body to a point distal of the placement of the stent during the procedure of stent expansion.

23 Claims, 5 Drawing Sheets